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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/524,575	03/13/2000	Takuya Hiramatsu	SEI-142-133	7265

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EXAMINER
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TRAN, HIEN THI

ART UNIT	PAPER NUMBER
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1764

DATE MAILED: 07/01/2003

10

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/524,575

Applicant(s)

HIRAMATSU ET AL.

Examiner

Hien Tran

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 21 April 2003.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 7-28 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 7-28 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

## DETAILED ACTION

### *Claim Rejections - 35 USC § 112*

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claims 27-28 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Specifically, in claim 27, lines 11-12, the limitation of "without means for transferring heat from the first catalyst zone to the second catalyst zone" is nowhere disclosed in the original specification.

It should be noted that any negative limitation or exclusionary proviso must have basis in the original disclosure. The mere absence of a positive recitation is not a basis for an exclusion.

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 27-28 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claims 27-28, it is unclear as to where the phrase of "without means for transferring heat from the first catalyst zone to the second catalyst zone" is disclosed in the instant specification.

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***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

7. Claims 7-22, 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over WO 94/11623 in view of EP 661,098, EP 602,963 and JP 7-124468.

WO 94/11623 discloses a system for exhaust gas purification comprising:

at least one adsorbent capable of adsorbing harmful substances in exhaust gas, the adsorbent containing a H/Beta-zeolite having a SiO<sub>2</sub>/Al<sub>2</sub>O<sub>3</sub> ratio of 100 or more (page 4, lines 22-37); and

at least one catalyst containing a catalyst component, capable of reducing said harmful substances (page 6, lines 13-24);

both said at least one adsorbent and said at least one catalyst being provided at an in-line position of exhaust pipe of an internal combustion engine.

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The apparatus of WO 94/11623 is substantially the same as that instantly claimed, but fails to disclose whether the adsorbent may contain at least one catalyst component of noble metal.

However, JP 7-124468, EP 661,098, EP 602,963 show the conventionality of providing an adsorbent containing Beta zeolite and at least one catalyst component of noble metal, such as Pt, Pd, Rh supported thereon (col. 11, lines 41-47 in EP 661,098; page 5, lines 2-7 in EP 602,963, abstract of JP 7-124468).

It would have been obvious to one having ordinary skill in the art to add a catalyst component as taught by JP 7-124468, EP 661,098, and EP 602,963 in the apparatus of WO 94/11623 for control coking occurred in parallel with the adsorption of harmful substances, i.e. hydrocarbon, thereby to facilitate the regeneration of the adsorbent without lowering the adsorption ability of the zeolite.

With respect to claims 9-10, WO 94/11623 discloses that the adsorbent contains a H/Beta-zeolite having a  $\text{SiO}_2/\text{Al}_2\text{O}_3$  ratio of 200 or more (page 4, lines 22-37, page 5, line 1).

With respect to claims 11-14, WO 94/11623 discloses that the catalyst contains at least one noble metal as catalyst component, selected from Pt, Pd and Rh (page 11, lines 26-31, page 19, lines 28-34).

With respect to claim 8, EP 602,963 discloses that Pd is preferably used as the noble metal carried into the zeolite (page 5, lines 6-7, 24-25). EP 661,098 also disclosed that Pd is preferably used because it allows for low temperature ignition (col. 11, lines 1-2).

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With respect to claims 15-18, JP 7-124468, EP 661,098, and EP 602,963 disclose that the noble metal is used by being loaded on heat-resistant oxide (col. 12, lines 43-47 in EP 661,098; page 5, lines 25-27 in EP 602,963; abstract of JP 7-124468).

With respect to claims 19-22, 26, the modified apparatus of WO 94/11623 is substantially the same as that instantly claimed, but fails to disclose whether the adsorbent may have a hollow central portion.

However, EP 661,098 discloses provision of an adsorbent in honeycomb shape, said adsorbent having a hollow central portion.

It would have been obvious to one having ordinary skill in the art to provide an adsorbent with hollow central portion as taught by EP 661,098 in the modified apparatus of WO 94/11623 so as to retard the timing of the start of HC desorption as taught by EP 661,098.

8. Claims 7-22, 26-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over EP 661,098 in view of WO 94/11623.

EP 661,098 discloses a system for exhaust gas purification comprising:

at least one adsorbent capable of adsorbing harmful substances in exhaust gas, the adsorbent containing a Beta-zeolite; and

at least one catalyst containing a catalyst component, capable of reducing said harmful substances;

both said at least one adsorbent and said at least one catalyst being provided at an in-line position of exhaust pipe of an internal combustion engine.

The apparatus of EP 661,098 is substantially the same as that instantly claimed, but is silent as to the specific type of the Beta-zeolite as claimed.

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However, WO 94/11623 discloses the conventionality of providing H/Beta-zeolite as an adsorbent, said H/Beta-zeolite having a  $\text{SiO}_2/\text{Al}_2\text{O}_3$  ratio of 100 or more (page 4, lines 22-37).

It would have been obvious to one having ordinary skill in the art to substitute the H/Beta-zeolite of WO 94/11623 for the Beta-zeolite of EP 661,098 for the known and expected result of obtaining the same results in the absence of unexpected results.

EP 661,098 also show the conventionality of providing an adsorbent containing Beta zeolite and at least one catalyst component of noble metal, such as Pt, Pd, Rh supported thereon (col. 11, lines 41-47 in EP 661,098).

With respect to claim 8, EP 661,098 also disclosed that Pd is preferably used because it allows for low temperature ignition (col. 11, lines 1-2).

With respect to claims 9-10, WO 94/11623 discloses that the adsorbent contains a H/Beta-zeolite having a  $\text{SiO}_2/\text{Al}_2\text{O}_3$  ratio of 200 or more (page 4, lines 22-37, page 5, line 1).

With respect to claim 12-14, EP 661,098 discloses that the at least one catalyst contains at least one noble metal as catalyst component, selected from Pt, Pd and Rh (col. 10, lines 29-35 in EP 661,098).

With respect to claims 15-18, EP 661,098 discloses that the noble metal is used by being loaded on heat-resistant oxide (col. 12, lines 43-47 in EP 661,098).

With respect to claims 19-22, 26, 28, EP 661,098 discloses provision of an adsorbent in honeycomb shape, said adsorbent having a hollow central portion.

With respect to claims 27-28, EP 661,098 does not disclose a means for transferring heat from the first catalyst zone to the second catalyst zone (Fig. 12).

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9. Claims 7-18, 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over EP 602,963 in view of WO 94/11623.

EP 602,963 discloses a system for exhaust gas purification comprising:

at least one adsorbent capable of adsorbing harmful substances in exhaust gas, the adsorbent containing a Beta-zeolite; and

at least one catalyst containing a catalyst component, capable of reducing said harmful substances;

both said at least one adsorbent and said at least one catalyst being provided at an in-line position of exhaust pipe of an internal combustion engine.

The apparatus of EP 602,963 is substantially the same as that instantly claimed, but is silent as to the specific type of the Beta-zeolite as claimed.

However, WO 94/11623 discloses the conventionality of using the H/Beta-zeolite as an adsorbent having a  $\text{SiO}_2/\text{Al}_2\text{O}_3$  ratio of 100 or more (page 4, lines 22-37).

It would have been obvious to one having ordinary skill in the art to substitute the H/Beta-zeolite of WO 94/11623 for the Beta-zeolite of either EP 602,963 for the known and expected result of obtaining the same results in the absence of unexpected results.

EP 602,963 also shows the conventionality of providing an adsorbent containing Beta zeolite and at least one catalyst component of noble metal, such as Pt, Pd, Rh supported thereon (page 5, lines 2-7 in EP 602,963).

With respect to claim 8, EP 602,963 discloses that Pd is preferably used as the noble metal carried into the zeolite (page 5, lines 6-7, 24-25).



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With respect to claims 9-10, WO 94/11623 discloses that the adsorbent contains a H/Beta-zeolite having a  $\text{SiO}_2/\text{Al}_2\text{O}_3$  ratio of 200 or more (page 4, lines 22-37, page 5, line 1).

With respect to claims 11-14, EP 602,963 discloses that the at least one catalyst contains at least one noble metal as catalyst component, selected from Pt, Pd and Rh (page 5, lines 18-29 in EP 602,963).

With respect to claims 15-18, EP 602,963 discloses that the noble metal is used by being loaded on heat-resistant oxide (page 5, lines 25-27 in EP 602,963).

With respect to claim 27, EP 602,963 does not disclose a means for transferring heat from the first catalyst zone to the second catalyst zone (Fig. 2).

10. Claims 19-22, 26, 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over EP 602,963 in view of WO 94/11623 as applied to claims 7-18 above and further in view of EP 661,098.

With respect to claims 19-26, the modified apparatus of EP 602,963 is substantially the same as that instantly claimed, but fails to disclose whether the adsorbent may have a hollow central portion.

However, EP 661,098 discloses provision of an adsorbent in honeycomb shape, said adsorbent having a hollow central portion.

It would have been obvious to one having ordinary skill in the art to provide an adsorbent with hollow central portion as taught by EP 661,098 in the modified apparatus of EP 602,963 so as to retard the timing of the start of HC desorption as taught by EP 661,098.

With respect to claim 28, EP 602,963 does not disclose a means for transferring heat from the first catalyst zone to the second catalyst zone (Fig. 2).

***Response to Arguments***

11. Applicant's arguments filed 4/21/03 have been fully considered but they are not persuasive.

Applicants argue that although there is no description in the instant specification of a means for transferring heat from the first to the second catalyst zone, the specification describes that "..., the exhaust passing through the hollow portion of the adsorbent warms up the downstream catalyst and raises the temperature of the catalyst earlier; ...". If there is a means for transferring heat from the first to the second zone in the instant invention, the provision of a hollow portion in the adsorbent structure would not raise the temperature of the downstream zone earlier.

Such contention is not persuasive since it is first noted that the element in the claim, e.g. "means for transferring heat", is written in a "means-plus-function" format, it must be interpreted as corresponding structure described in the specification or the equivalents thereof consistent with 35 U.S.C. 112, sixth paragraph. In *re Donaldson*, 16 F.3d 1189, 1193, 29 USPQ 1845, 1848 (Fed. Cir. 1994) (en banc). However, since the instant specification does not disclose adequate structures corresponding to each of the claimed elements and the equivalents for performing the recited functions, it is impossible to determine the structure of the claimed elements and the equivalents thereof, as required by 35 U.S.C. 112, sixth paragraph. See *Ex parte Klumb*, 159 USPQ 694 (Bd. App. 1967). Second, any negative limitation or exclusionary proviso must have basis in the original disclosure. The mere absence of a positive recitation is not a basis for an exclusion.

Applicants argue the phrase “consisting essentially of” excludes the first catalyst zone of WO 94/11623. Such contention is not persuasive as the transitional phrase “consisting essentially of” only excludes those that materially affect the basis and novel characteristics of the instant claims. There is no evidence that the presence of first catalyst zone in WO 94/11623 would materially initially affect the basis and novel characteristics of the instant invention.

Applicants argue that the instant specification defines an in-line exhaust system has no bypass line and there is also no description of a crossflow monolith defining first and second catalyst zones as in WO 94/11623. Such contention is not persuasive as although applicants define the in-line system having no bypass line, applicants fail to exclude the crossflow monolith from such system.

Applicants argue that WO 94/11623 discloses nothing concerning the use of any of adsorbents therein as the adsorbent disclosed in EP '098 and therefore provides no basis for predicting the results of using an H/beta-zeolite as the adsorbent of EP '098. Such contention is not persuasive as EP '098 and WO 94/11623 are both directed to the adsorbent for adsorbing the pollutants from exhaust gas. EP '098 discloses the use of different types of zeolite, ZSM-5, beta zeolite (col. 11, lines 14-21). Similar, WO 94/11623 discloses that the use of different types of zeolite, ZSM-5 and beta-zeolite, etc. is known in the art. WO 94/11623 further discloses a specific type of the beta-zeolite, e.g. H/beta-zeolite, is preferred (page 4, line 22 to page 5, line 9; page 12, line 19 to page 13, line 14). Since the different types of zeolite were art-recognized equivalents at the time the invention was made in adsorbing the hydrocarbon pollutant from exhaust gas as evidenced by EP '098 and WO 94/11623, it would have been an obvious matter of design choice

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for one of ordinary skill in the art to select an appropriate type of zeolite since such would have involved a mere substitution of known equivalents.

With respect to the declaration filed 4/21/03, it should be noted that the experiment therein only uses different Si/Al ratio, different amount of the adsorbent between the invention and prior art and therefore it is difficult to understand which is the main effect in the result thereof. Furthermore, the language of the claims does not commensurate in scope with the condition of the experiment in the declaration.

Applicants argue that WO 94/11623 gives no reasons why the range of 200-600 is preferred. That may be so, however, it does not deny the fact that the use of such range, which well encompasses the instant range, is known in the art.

#### ***Conclusion***

12. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

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13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hien Tran whose telephone number is 308-4253. The examiner can normally be reached on Tuesday-Friday from 7:30AM-6:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn Caldarola can be reached on 308-6824. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 308-0661.

HT  
June 30, 2003

*Hien Tran*  
**Hien Tran**  
**Primary Examiner**  
**Art Unit 1764**